

WE CLAIM:

1. An isolated nucleic acid molecule comprising a nucleotide sequence that encodes the amino acid sequence shown in Figure 2.
2. The isolated nucleic acid molecule of claim 1 comprising the DNA sequence of FIG. 1.
3. An isolated nucleic acid molecule comprising the DNA sequence of Fig. 3.
4. The isolated nucleic acid molecule of claim 3 comprising a nucleotide sequence that encodes the amino acid sequence shown in Figure 4.
5. An isolated nucleic acid molecule comprising a nucleotide sequence that hybridizes to the nucleotide sequence of Claim 1 or 3 under stringent conditions and encodes a functionally equivalent gene product.
6. An isolated nucleic acid molecule comprising a nucleotide sequence that hybridizes to the nucleic acid of claim 1 or 3 under moderately stringent conditions and encodes a functionally equivalent TRP8 gene product.
7. An isolated nucleic acid molecule that is a *TRP8* antisense molecule.
8. An isolated polypeptide comprising the amino acid sequence of Figure 2.

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Figure 4.

9. An isolated polypeptide comprising the amino acid sequence of

10. An isolated polypeptide comprising the amino acid sequence encoded by a nucleotide sequence that hybridizes to the nucleotide sequence of Claim 1 or 3 under stringent conditions and encodes a functionally equivalent gene product.

11. An isolated polypeptide comprising the amino acid sequence encoded by a nucleotide sequence that hybridizes to the nucleotide sequence of Claim 1 or 3 under moderately stringent conditions and encodes a functionally equivalent gene product.

12. A purified fragment of a TRP8 protein comprising a domain of the TRP8 protein selected from the group consisting of the transmembrane domain and cytoplasmic domain.

13. A chimeric protein comprising a fragment of a TRP8 protein consisting of at least 6 amino acids fused via a covalent bond to an amino acid sequence of a second protein, in which the second protein is not a TRP8 protein.

14. An antibody which is capable of binding a TRP8 protein.

15. A recombinant cell containing the nucleic acid of claim 5 or 6.

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16. A method of producing a TRP8 protein comprising growing a recombinant cell containing the nucleic acid of claim 5 or 6 such that the encoded TRP8 protein is expressed by the cell, and recovering the expressed TRP8 protein.

17. A method for identifying a compound that induces the perception of a bitter taste comprising:

- (i) contacting a cell expressing the TRP8 channel protein with a test compound and measuring the level of TRP8 activation;
- (ii) in a separate experiment, contacting a cell expressing the TRP8 channel protein with a vehicle control and measuring the level of TRP8 activation where the conditions are essentially the same as in part (i); and
- (iii) comparing the level of activation of TRP8 measured in part (i) with the level of activation of TRP8 in part (ii),
wherein an increased level of activated TRP8 in the presence of the test compound indicates that the test compound is a TRP8 inducer.

18. A method for identifying a compound that inhibits the perception of a bitter taste and/or promotes the perception of a sweet taste comprising:

- (i) contacting a cell expressing the TRP8 channel protein with a test compound in the presence of a bitter tastant and measuring the level of TRP8 activation;
- (ii) in a separate experiment, contacting a cell expressing the TRP8 channel protein with a bitter tastant and measuring the level of TRP8 activation, where

the conditions are essentially the same as in part (i); and

(iii) comparing the level of activation of TRP8 measured in part (i) with the level of activation of TRP8 in part (ii), wherein a decrease level of activation of TRP8 in the presence of the test compound indicates that the test compound is a TRP8 inhibitor.

19. A method for identifying an inhibitor of bitter taste *in vivo* comprising:

(i) offering a test animal the choice of consuming either (a) a composition comprising a bitter tastant or (b) the composition comprising the bitter tastant as well as a test inhibitor; and

(ii) comparing the amount of consumption of the composition according to (a) or (b), wherein greater consumption of the composition according to (b) has a positive correlation with an ability of the test inhibitor to inhibit the perception of bitter taste associated with the tastant.

20. A method for identifying an activator of bitter taste *in vivo* comprising:

(i) offering a test animal the choice of consuming either (a) a control composition or (b) the composition comprising a test activator; and

(ii) comparing the amount of consumption of the composition according to (a) or (b),

wherein greater consumption of the composition according to (a) has a positive correlation with an ability of the test activator to activate the perception of bitter taste.

21. A method of inhibiting a bitter taste resulting from contacting a taste tissue of a subject with a bitter tastant, comprising administering to the subject an effective amount of a bitterness inhibitor.

22. A method of producing the perception of a sweet taste by a subject, comprising administering, to the subject, a composition comprising a compound that acts as a bitterness inhibitor in addition to eliciting a sweet taste.

23. A method of producing the perception of a bitter taste by a subject, comprising administering, to the subject, a composition comprising a compound that acts as a bitterness activator.

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